REMARKS

Favorable consideration of this Application as presently amended and in light of the following discussion is respectfully requested. Support for amended claim 26 can be found in paragraph no. 0039 of the specification. The applicant believes that if claim 26 is allowable, then claim 31 should be rejoined. There would not be a further search required for claim 31 if claim 26 is allowable. Support for newly added claims 32-38 can be found in the original claims.

Claims 26-30 have been rejected under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement. Claims 27-30 are also rejected because they depend on claim 26. Claims 26-30 are rejected under 35 U.S.C. 103(a) as being obvious over Turner (US 6,331,233 B1) ("Turner") and Segal (US 6,238,494)("Segal"). The applicant respectfully traverses these rejections.

Comments to Interveiw

In an Interview on September 6, 2007, Applicant and Examiner discussed potential claim amendments to overcome Turner and Segal. Specifically, the applicant discussed incorporating features from paragraph no. 00039 in the specification, which the applicant has done. The applicant thanks the Examiner for permitting applicant to interview the application and the applicant believes that the interview helped expedite prosecution.

35 U.S.C. 112, First Paragraph Rejection

Claims 26-30 have been rejected under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement. The applicant believes that the claims as amended are incompliance with 35 U.S.C. 112, first paragraph. For the above reasons, this rejection should be withdrawn.

35 U.S.C. 103 Rejections

The applicant has two independent claims (claims 26 and 32). Claims 26-30 are rejected under 35 U.S.C. 103(a) as being obvious over Turner or Segal.

Turner was previously cited by the Examiner in the Office Actions dated March 16, 2004 and November 29, 2004. In the Office Action of May 26, 2005, the rejection based on Turner was withdrawn by the Examiner.

It is asserted at page 4 of the Office Action mailed August 10, 2007 that because Turner teaches uniform texture throughout the thickness of the tantalum plate that the uniformity is "present in every direction" and somehow meets the limitation in Claim 1 of uniform texture "from center to edge", and also meets the claim limitation of "{100} and {111} crystallographic orientations that varies by less than 30 percent across the surface of any plane of said refractory metal plate. Applicant respectfully disagrees with these assertions.

The data in the first declaration of Peter Jepson, submitted in the response of March 15, 2005, demonstrates that a plate prepared in accordance with Turner does not meet the <30% criterion through the thickness at a typical point. Since Turner does not disclose the sequence of steps used to make the refractory metal plates of the present invention, the plates of Turner do not inherently meet this limitation, nor is there any suggestion of how to achieve such uniformity as in the present invention.

Furthermore, Turner states at col. 2, lines 52-63,

> This invention uses a series of deformation techniques, with a minimum of three (3) intermediate, high-temperature inert-atmosphere anneals, preferably vacuum, to produce a combination of fine-grain size (mean <100μm) tantalum targets with a uniform, **predominately {111}**<uvw> texture throughout the target thickness, until now unseen in the industry today. `Uniform texture throughout the target

> thickness` refers to a homogeneous distribution of textural components with no visible banding at a resolution of 20 x from the target surface to at least mid-thickness. `Inert` refers to an atmosphere that is non-reactive with the tantalum-comprising mass. (emphasis added)

The applicant's claimed invention is not predominately {111} texture. Therefore, Turner teaches away from the applicant's claimed invention.

Segal uses a different method of measuring texture (X-ray diffraction rather than EBSD), and a different method of presenting the results (Intensity Ratio rather than Distribution by area). The applicant is not aware of any study relating to the results of these different methods. However, even assuming arguendo that the plate described by Segal has perfectly uniform texture throughout its volume, it is titanium not tantalum shown in the figures! The two metals (titanium and tantalum) react completely differently, in terms of texture formation, to cold-working. Titanium naturally forms a strong uniform texture (1013 // ND), whereas tantalum naturally forms a duplex structure with an inhomogeneous mix of 100 // ND and 111 //ND. The examiner's sentence near the bottom of page 5 which begins 'In addition . . .', is correct: but the applicant is not claiming simply 'a mixture of 100 and 111 grains': the applicant is claiming a constant, or uniform, or homogeneous, mixture: that's the crux of the applicant's invention. The examiner's sentence which starts at the bottom of page 5 (Since Segal teaches. . .) is respectfully wrong. Segal the only information given about the tantalum is its purity: there is no information about the grain size or texture resulting from Segal's experiments with tantalum. The applicant has informed the undersigned that a uniform distribution of 100 and 111 is not obtained when a tantalum ingot is subjected to the process described in Segal.

Furthermore, the applicant claims that the metal plate is uniform through the thickness from the center of the plate to the edge of the plate with no preferred direction within the plate so

there is not a predominantly {100} or {111} orientation. The applicant does not believe that this is taught by Segal. For the above reasons, this rejection should be withdrawn.

With respect to independent claim 32

Claim 32 has deleted some of the previous limitations that were added in the claim to distinguish over the prior art. The applicant believe that claim 32 is a allowable over the previous rejections because claim 32 requires a texture that is "uniform through the thickness from the center of the plate to the edge of the plate with no preferred direction within the plate so there is not a predominantly {100} or {111} orientation". As stated above, Turner and Segal do not teach this limitation.

US Patent 6,348,113 to Michaluk (Michaluk '113)

Michaluk '113 was previously applied against the applicant's claimed invention. Michaluk '113 discloses under the heading of the Summary of the Invention at col. 2, lines 20-27,

> The present invention also relates to a high purity tantalum, e.g., suitable for use as a sputtering target, having a fully recrystallized grain size with an average grain size of about 150 .mu.m or less and/or having a primary (111)-type texture substantially throughout the thickness of the tantalum and preferably throughout the entire thickness of the tantalum metal and/or **having an absence of strong (100) texture bands** within the thickness of the tantalum. (emphasis added)

Michaluk '113 does not teach the feature of having a texture that is "uniform through the thickness from the center of the plate to the edge of the plate with no preferred direction within the plate so there is not a predominantly {100} or {111} orientation" as is required by the applicant's claimed invention.

Michaluk (US 2002/0072475) ("Michaluk '475) discloses at paragraph no. 0038:

> The high purity niobium ingot can then be thermomechanically processed to produce the high purity niobium containing product. The fine and preferably fully recrystallized grain structure and/or uniform texture is imparted to the product through a combination of cold and/or warm working and in-process annealing. **The high purity niobium product preferably exhibits a uniform texture of mixed or primary (111) throughout its thickness as measured by orientation imaging microscopy (OIM) or other acceptable means.** With respect to thermomechanical processing, the ingot can be subjected to rolling and/or forging processes and a fine, uniform microstructure having high purity can be obtained. The high purity niobium has an excellent fine grain size and/or a uniform distribution. The high purity niobium preferably has an average recrystallized grain size of about 150 microns or less, more preferably about 100 microns or less, and even more preferably about 50 microns or less. Ranges of suitable average grain sizes include from about 25 to about 150 microns, from about 30 to about 125 microns, and from about 30 to about 100 microns. (emphasis added)

Michaluk '475 discloses in paragraph no. 00044

> The high purity niobium metal or alloy preferably has **a primary or mixed (111) texture, and a minimum (100) texture throughout the thickness of the sputtering target, and is sufficiently void of (100) textural bands**. (emphasis added)

Michaluk '475 does not teach the feature of having a texture that is "uniform through the thickness from the center of the plate to the edge of the plate with no preferred direction within the plate so there is not a predominantly {100} or {111} orientation" as is required by the applicant's claimed invention.

WO 99/66100 (WO '100)

WO '100 discloses at page 8, a uniform crystallographic texture of {100} across the face and through the thickness of the target. WO '100 does not teach the feature of having a texture that is "uniform through the thickness from the center of the plate to the edge of the plate with no preferred direction within the plate so there is not a predominantly {100} or {111} orientation" as is required by the applicant's claimed invention.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 13194-00163-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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